

1116-37-835

**Chong Gyu Lee\*** (cglee@ssu.ac.kr). *Generalized dynamical systems, from monoid actions to homomorphisms*. Preliminary report.

We can define a dynamical system with a self map  $f$  on a set  $S$ . We may consider this dynamical systems as a monoid action on a set  $S$ . In such point of view, we can generalize the concept of dynamical systems. For examples, when we consider an algebraic group, we consider  $n$ -multiplication map on a group and consider dynamical systems defined by  $n$ -multiplication. Then the torsion group is the set of preperiodic points. We may consider not only iterations of  $n$ -multiplication but all multiple maps and get the same result. So we can generalize the dynamical system as an action by a set of self maps with some specific condition. Such points of view will give us one more step, we may have a set of homomorphisms whose codomain is not the same with the domain, like isogenies of two elliptic curves. In this talk, we examine some examples of such generalization and find some condition which dynamical system between projective spaces can have small preperiodic points. (Received September 14, 2015)